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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/636,497 08/11/00 WANG Y 60SI01932

KEVIN E MCVEIGH
GENERAL ELECTRIC COMPANY
ONE PLASTICS AVENUE
PITTSFIELD MA 01201

IM22/0828

EXAMINER

ZIMMER, M

ART UNIT

PAPER NUMBER

1712

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/636,497	Applicant(s) WANG, YI-FENG	
	Examiner Marc S. Zimmer	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-20 and 22 is/are rejected.
- 7) ☒ Claim(s) 6-10, 21 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

Specification

The disclosure is objected to because of the following informalities. On page 6 of the Specification the Applicants outline the structure of organohydrogensiloxane crosslinker and stipulate that, "the hydride content is from about 0.05 to about 5 percent by weight". It is not understood how an organohydrogensiloxane for which the hydrogen groups comprise even 0.05% of the full weight of the polymer may be contemplated. Consider, for example, an organosiloxane oligomer having 10 repeat units and one hydrogen atom on each silicon atom. The balance of the substituents is methyl groups, the lightest possible monovalent hydrocarbon available. The entire molecular weight, as calculated by summing up the weight of 10 silicon atoms, 9 oxygen atoms, 12 methyl groups, and 10 hydrogen atoms is $281 + 144 + 180 + 10$ or 615. The ratio of the contribution of the hydrogen atoms, 10 amu, to the entire molecular weight of the compound is 0.016. Hence, it is not understood how one could adhere to the structural limitations of the claim and produce a polymer having the recited hydride content. Moreover, the Examiner is unable to ascertain whether or not the limitations regarding the ratio of vinyl groups to silicon-bound hydrogen atoms need only be satisfied when the previous limitation is met. Accordingly, clarification is solicited.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 17 and 18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As before, it is not clear as to how an organohydrogensiloxane for which the hydrogen groups comprise even 0.05% of the full weight of the polymer may be contemplated. Clarification is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites only the use of a non-fumed silica whereas claim 1 requires that the practitioner employ a silaceous material constituted of precipitated silica. Hence, there is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-3, 11-13, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Jensen, U.S. Patent # 4,929,669.

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As for claims 1, 3, and 22, Jensen discloses a polyorganosiloxane elastomer composition that exhibits better recovery characteristics after being subjected to prolonged compression at temperatures exceeding 100° C. The primary components of this composition are revealed in column 3, lines 34-55 to be as follows: (A) a vinyl-functionalized siloxane polymer, (B) an organohydrogenpolysiloxane, (C) a platinum hydrosilylation catalyst, (D) reinforcing silica, and (E) a vinyl-specific organic peroxide that imparts the aforementioned recovery properties. The alkene-substituted silicone (A) may be comprised of two polysiloxane compounds, A1 and A2, of different molecular weights. Both A1 and A2 are characterized as having ethylenically unsaturated hydrocarbon substituents at the terminal positions and up to 5 mol % of the internal repeat units of A2 may, likewise, contain vinyl groups (column 5, lines 46-49). A generic formulaic representation of the structure of A2 is offered in column 6, line 7.

Regarding the inorganic silicon-based filler, Jensen instructs that colloidal silica, a form of precipitated silica is desired for its relatively high surface area (at least 50 m²/g). Indeed, those having a surface of 300 m²/g or more are deemed particularly desirable. To prevent structuring, it is common to treat the silica with a low molecular weight organosilicon compound such as a hydroxyl-terminated siloxane oligomer.

As for claim 2, the amounts recited by the Applicant coincide with quantities of each of these materials added to the composition of Example 1.

As for claims 11-13, Jensen states that the viscosity of A2 corresponds to the range between 100 and 100,000 centipoise (1 Pa·s = 1000 cp). The mandatory vinyl

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groups aside, A2 will be comprised primarily of methyl substituents (column 6, lines 18-21), as is the case in Example 1.

Claims 1, 3-5, 11-13, and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Conway et al., U.S. Patent # 5,859,094.

As for claims 1, 3, 19, and 20, Conway discloses a silicone composition containing (A) through (D) from above but not (E). As before, the incorporation of two vinyl group-terminated siloxane polymers is contemplated. In the second such polysiloxane material, represented by the formula in column 3, between 1 and 5 mol percent of the internal repeat units contain a vinyl group. The silaceous filler, for the purposes of their invention, is either fumed or precipitated silica having a surface area preferably in a range spanning 200 m²/g to 500 m²/g. The treating agents used to facilitate dispersion of the silica and preclude hardening of the composition are the same as those employed by Jensen. However, whereas Jensen teaches the use of a peroxide as a low compression set adjuvant, Conway et al make no provisions for a compound of matching description. Nonetheless, Conway does teach the inclusion of acetylenic alcohols and, in particular, 1-ethynyl-1-cyclohexanol (column 7, lines 15-17) as an inhibitor of the crosslinking reaction. Despite Conway's failure to mention the influence of this compound over the compression set of a silicone elastomer, it has been held that, if the prior art teaches the identical chemical structure, the properties disclosed by the Applicant are necessarily present (MPEP 2112.01). That is, although 1-ethynyl-1-cyclohexanol is added strictly for its catalyst-inhibiting aptitude, it would also

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function as an agent for modifying the compression set properties of the composition.

Consequently, claim 1 is anticipated.

As for claims 4 and 5, the organohydrogenpolysiloxane is added in a quantity that would provide up to 10 silicon-bound hydrogen atoms for every vinyl group contributed by the other polymer materials (column 6, lines 17-21).

As for claims 11-13, the second polymer is one having a viscosity of up to 200,000 cp and for which methyl and vinyl groups are contemplated according to column 3. It was stated *vide supra* that 1 to 5 percent of the repeat units contained alkenyl substituents.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen, U.S. Patent # 4,929,669.

As for claims 14-16, the organosilicon treating agent mentioned in column 11, lines 67-68 through column 12, lines 1-5 fits the structural description offered. The vinyl content is expressed in terms of its contribution to the total *weight* (10%) of the polymer as opposed to in mol %. Insofar as the molecular weight of a vinyl group, at 27 amu, weighs only about twice as much as the methyl groups, it would be present in a quantity corresponding to about 5 mol %. However, the Applicants have not established any

criticality for this parameter hence a demonstration that this small variance in vinyl content would produce a change in performance is required.

As for claims 17-18, the organohydrogenpolysiloxane may contain internal- and terminal Si-H bonds alike according to column 6, lines 67-68. Preferred are those hydride-functionalized silicones for which there are approximately 3 to 5 hydrogen substituents per molecule. The balance of the repeat units are preferably dimethylsiloxane units (column 7, lines 15-18). Jensen states in column 6, lines 62-65 that the hydrogen-containing crosslinking agent may possess as few as 4 silicon atoms up to an average of 20 or more and should feature more than 2 Si-H groups in each chain. Organohydrogenpolysiloxanes of this size satisfy the viscosity limitation set forth by claim 17.

Allowable Subject Matter

Claims 6-10, 21, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The viscosities reported for the compound corresponding to the linear alkenyl-terminated diorganopolysiloxane gum in the Jensen and Conway references are lower by a factor of at least 10 and 5 respectively though each of the other limitations is satisfied. Concerning claims 21 and 23, the utilization of either of these compounds within the confines of a silicone elastomer composition was not located.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loisel, U.S. Patent # 5,989,719 describes an oil-resistant silicone elastomer that mirrors the instant invention in much the same way as the Conway reference did.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700

Marc S. Zimmer
AU 1712

August 22, 2001